Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application. Claims 1 and 9 have been amended. Claims 7, 8, 14, and 23-26 have been canceled without prejudice.

Listing of Claims:

1. (Currently Amended) A method of reducing polarization dependence in a cladding layer of an optical fiber, wherein the cladding layer surrounds a core of the optical fiber, the method comprising:

heating a section of the optical fiber; and

allowing the section to cool, the heating being controlled to reduce polarization dependence in the cladding layer<u>, wherein the section is heated and allowed to cool such that the core of the fiber does not expand by more than 20%</u>.

2. (Original) The method of claim 1 wherein the reduction in polarization dependence is due to a reduction of stresses in the cladding layer.

3. (Original) The method of claim 1 wherein time and temperature of heating are controlled to reduce polarization dependence in the cladding layer.

4. (Original) The method of claim 1 wherein the optical fiber is a single mode optical fiber.

5. (Original) The method of claim 1 wherein the polarization dependence is

reduced after the optical fiber is cooled.

6. (Original) The method of claim 1, wherein the section is heated to a temperature between 500°C and 1500°C.

7. (Canceled)

8. (Canceled)

9. (Currently Amended) [The method of claim 8, wherein the heat source is a flame.]

A method of reducing polarization dependence in a cladding layer of an optical fiber, wherein the cladding layer surrounds a core of the optical fiber, the method comprising:

heating a section of the optical fiber with a flame, wherein the flame is between 1 and 20 mm wide as measured in a direction parallel to the longitudinal axis of the section; and

allowing the section to cool, the heating being controlled to reduce polarization dependence in the cladding layer.

10. (Original) The method of claim 9, wherein the flame is a hydrogen flame.

11. (Original) The method of claim 6, wherein the flame is held at a distance of

between 0.5mm and 5mm from the section.

12. (Original) The method of claim 9 wherein the flame is moved relative to the section in a direction parallel to the longitudinal axis of the section.

13. (Original) The method of claim 12 wherein the flame moves relative to the section at a speed of between 1 and 50mm/s.

14. (Canceled)

15. (Original) The method of claim 1, further comprising:

moving opposing ends of the section apart to compensate for an increase in length of the section while being heated.

16. (Original) The method of claim 15, wherein the opposing ends are moved apart with a force of between 0.05 N and 0.5 N.

17. (Original) The method of claim 1, further comprising:

moving a flame which heats the section and has a width of between 1mm and 20mm as measured in a direction parallel to the longitudinal axis of the section at a speed of between 1 and 50 mm/s in a direction parallel to the longitudinal axis of the section while maintaining the flame at a distance of between 0.5 and 5 mm from the section.

18. (Original) The method of claim 17 further comprising:

applying a force of between 0.05 N and 0.5 N which moves opposing ends of the section apart, while the section is being heated, to compensate for a decrease in tension of the section while being heated.

19. (Original) The method of claim 1 further comprising:

stripping a jacket surrounding the cladding layer of the section to expose the section prior to heating the section.

20. (Original) The method of claim 19 wherein two portions of the jacket on opposing sides of the exposed section remain around the cladding layer after stripping the jacket surrounding the cladding layer of the section.

21. (Original) The method of claim 19, wherein the jacket is stripped by exposure to sulfuric acid.

22. (Original) The method of claim 1, wherein the optical fiber is formed by modified chemical vapor deposition.

23-26. (Canceled)

27. (Original) A method of constructing an optical filter, comprising:

heating an exposed section of an optical fiber;

allowing the section to cool; and

acoustically coupling an acoustic wave to the optical fiber to generate a flexural wave traveling along the exposed section, wherein the heating of the exposed section is controlled to reduce polarization dependent loss of the filter.

28. (Original) The method of claim 27, further comprising:

stripping a jacket surrounding a cladding layer of the section to expose the section prior to heating the section.

29. (Original) The method of claim 28 wherein two portions of the jacket on opposing sides of the exposed section remain around the cladding layer after stripping the jacket surrounding the cladding layer of the section.

30. (Original) The method of claim 27 wherein time and temperature of heating are controlled to reduce polarization dependence in a cladding layer of the section.

31. (Original) The method of claim 27, further comprising:

mounting two portions of the optical fiber located at opposing ends of the exposed section to first and second mounts respectively, the mounts being secured to a support frame, so that the section is under tension.

32. (Original) The method of claim 31 wherein the polarization dependent loss is reduced to less than 1.0 dB.

33. (Original) The method of claim 30 wherein the polarization dependence in the cladding is reduced to an extent so that polarization dependent loss of the filter is less than 1.0 dB.

34. (Original) The method of claim 27 further comprising:

moving opposing ends of the exposed section apart to compensate for an increase in length of the exposed section while being heated.

35. (Original) An acousto-optic filter comprising:

an acoustic wave exciter; and

an optical fiber having an interaction region, the acoustic wave exciter applying an acoustic wave to the interaction region to couple light from a first mode to a second mode, wherein the amount of polarization dependence in the interaction region results in a polarization dependent loss of the filter that is less than 1.0 dB.

36. (Original) The filter of claim 35 wherein the interaction region is a portion of the optical fiber that has been annealed.

37. (Original) The filter of claim 36 wherein the interaction region includes a cladding layer in which polarization dependence has been reduced by the annealing, and the reduced polarization dependence of the cladding layer results in the polarization dependent loss less than 1.0 dB.

38. (Original) The filter of claim 35 wherein the interaction region includes a cladding layer in which polarization dependence has been reduced, and the reduced polarization dependence of the cladding layer results in the polarization dependent loss less than 1.0 dB.

39. (Original) The filter of claim 35 wherein the first mode is a core mode and the second mode is a cladding mode.

40. (Original) The filter of claim 38 wherein the first mode is a core mode and the second mode is a cladding mode.

41. (Original) The filter of claim 35 wherein the interaction region is a portion of the optical fiber in which a jacket has been removed.

42. (Original) The filter of claim 35 wherein the frequency of the light coupled between modes relates to the frequency of the acoustic wave applied to the interaction region.

43. (Original) The filter of claim 42 wherein the amount of light coupled between modes relates to the magnitude of the acoustic wave applied to the interaction region.

44. (Original) The filter of claim 37 wherein the annealing comprises controlled

heating followed by cooling of existing fiber to reduce stresses in the cladding layer of the interaction region, thereby reducing polarization dependence in the cladding region.

45. (Original) The filter of claim 35, the acoustic wave exciter comprising an acoustic wave generator and an acoustic wave propagation member, wherein the acoustic wave propagation member applies to the interaction region an acoustic wave generated by the acoustic wave generator.

46. (Original) An acousto-optical filter comprising:

a support;

first and second mounts at spaced locations on the support;

an optical fiber having first and second mounted portions secured to the first and second mounts respectively and an interaction length between the first and second mounted portions, at least the interaction length having a core and a cladding layer on the core;

a signal generator operable to generate a periodic signal; and

an electro-acoustic transducer having a terminal connected to the signal generator and an actuating portion, the periodic electric signal causing periodic vibration of the actuating portion, and the actuating portion being connected to the interaction length so that the vibration generates flexural wave traveling along the interaction length so that a frequency of light propagating through the core couples into the cladding layer, stresses in the cladding layer being sufficiently low so that the light coupling into the cladding layer has polarization dependent loss of less than 1.0 dB.

47. (Original) The filter of claim 46 wherein polarization dependence in the optical fiber is reduced by:

heating a section of the optical fiber; and

allowing the section to cool, the heating being controlled to reduce stresses in the cladding layer of the section, thereby reducing polarization dependence in the cladding layer.